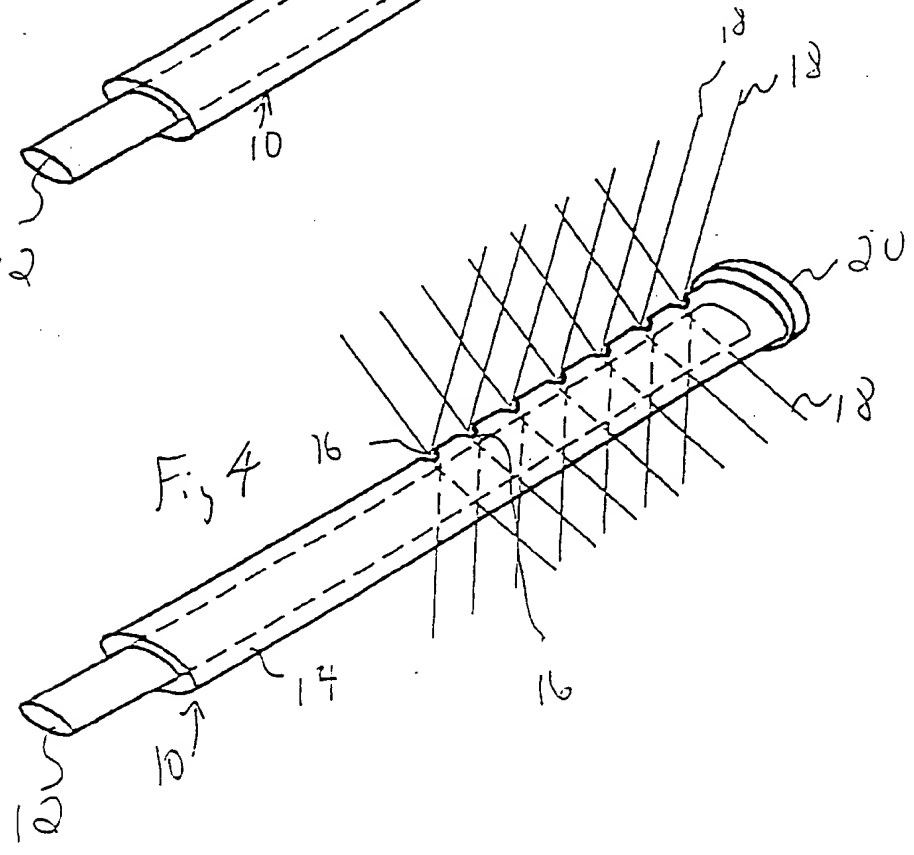
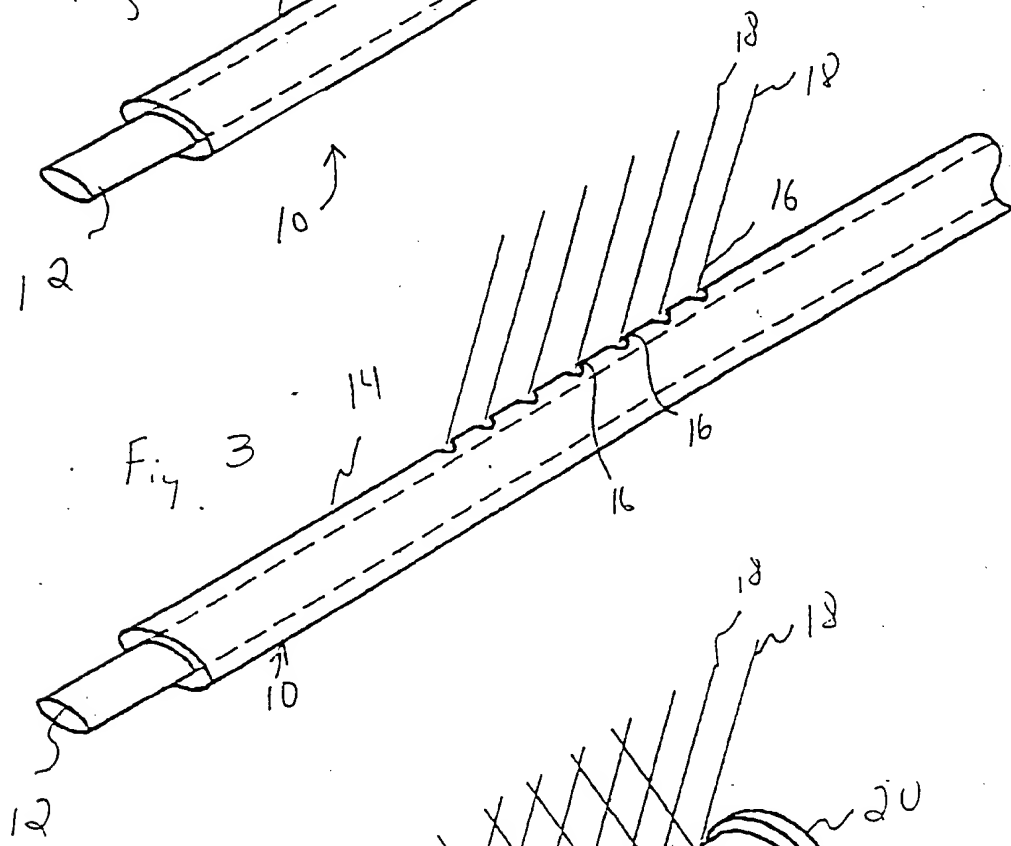
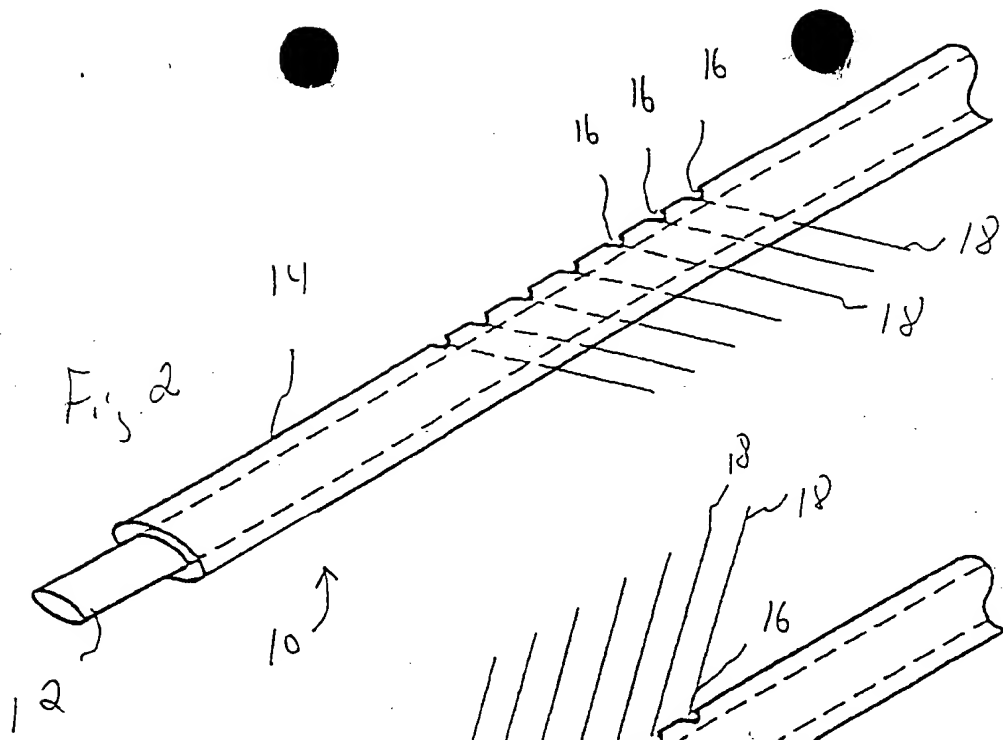
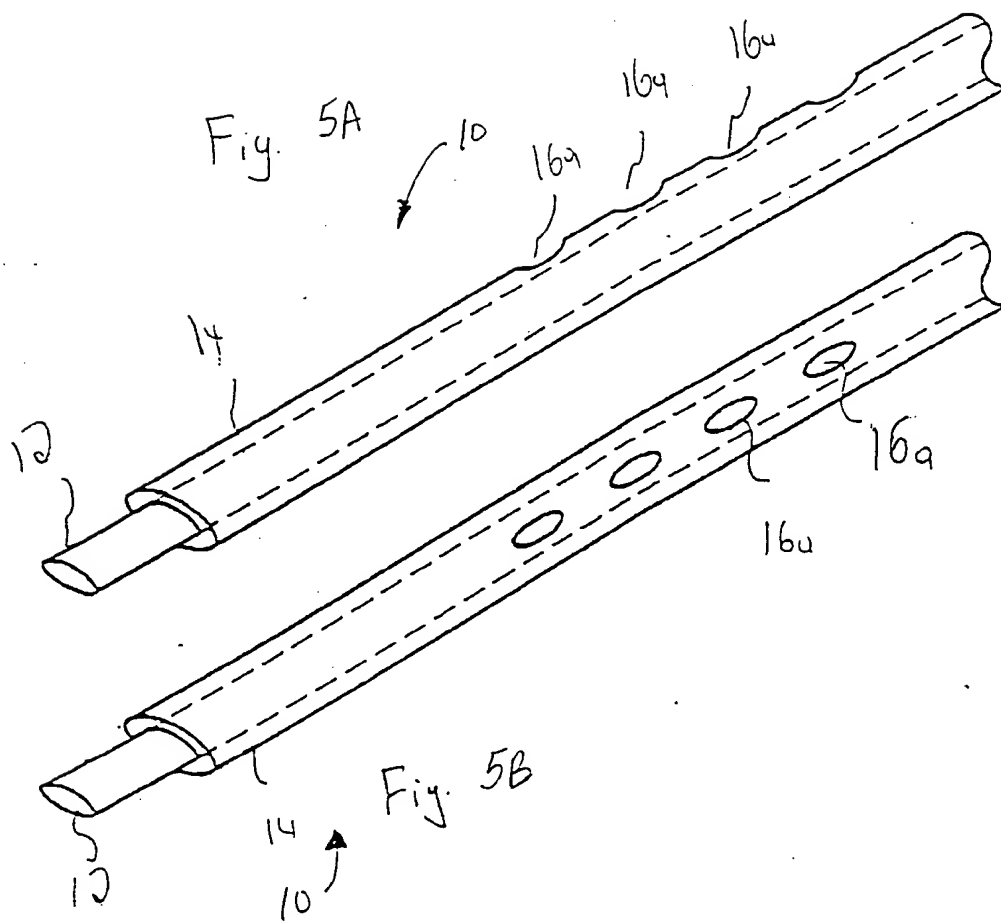
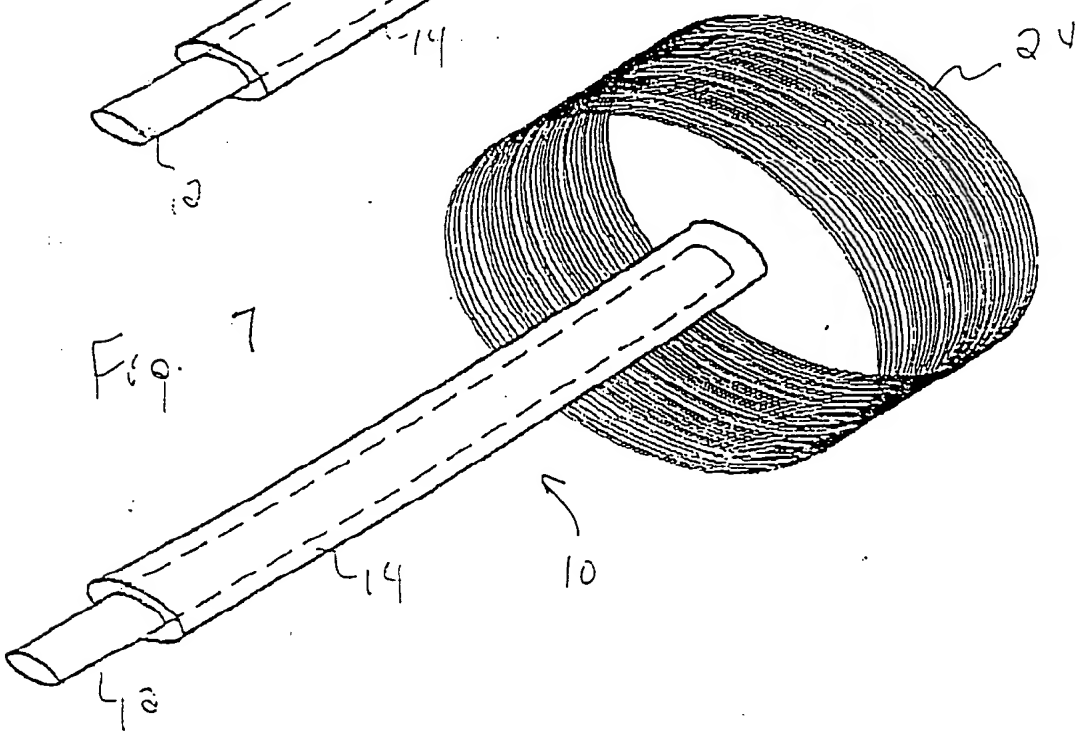
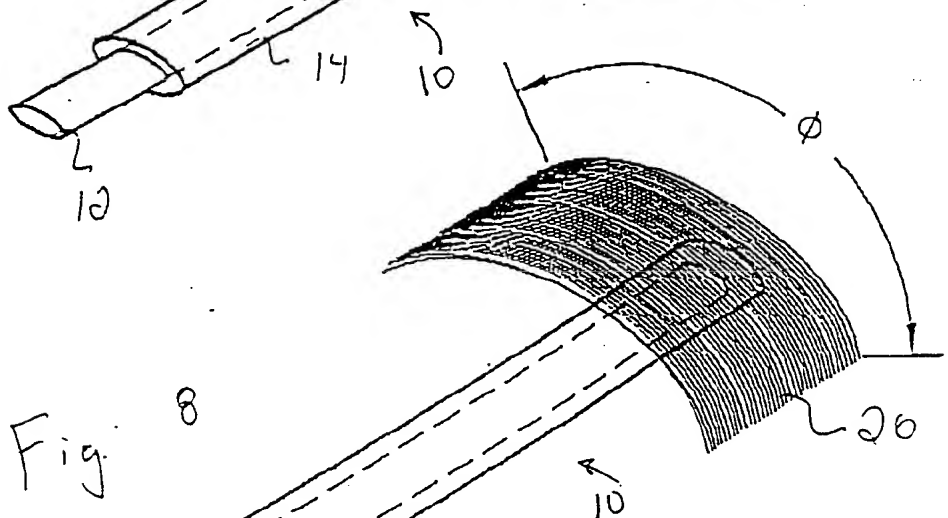
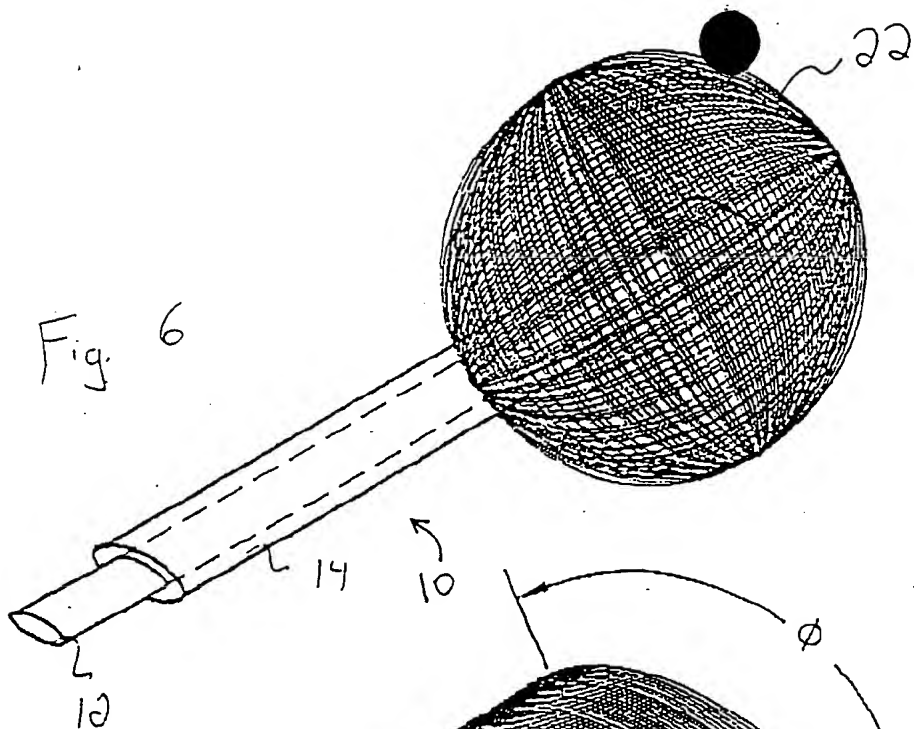


Fig. 1A







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Fig. 9

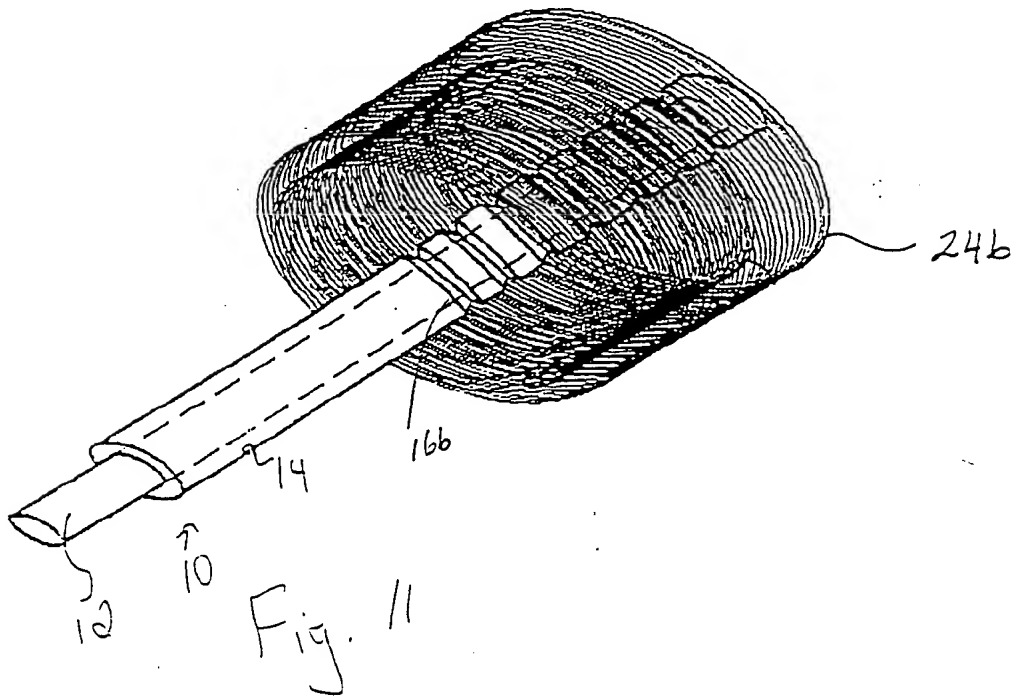
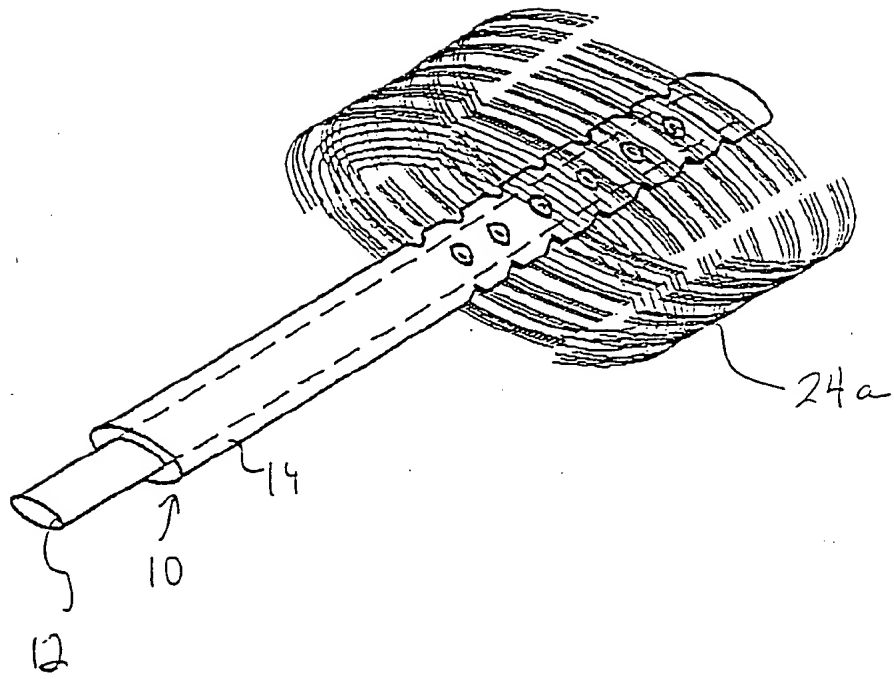
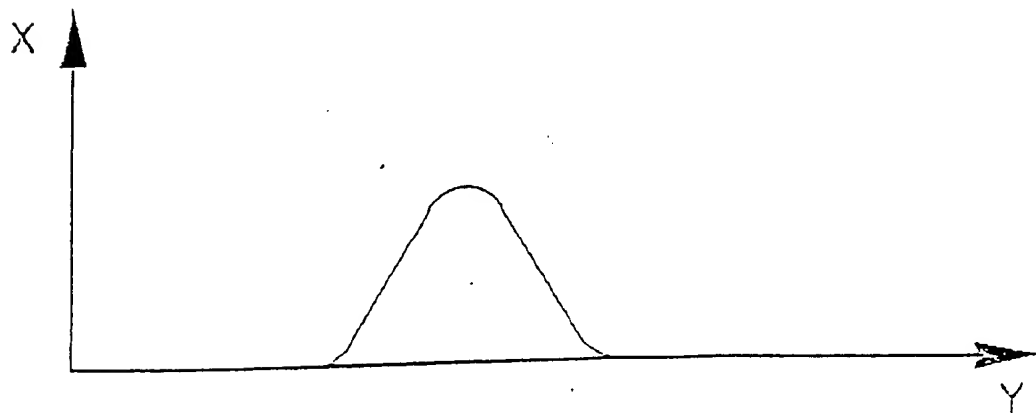
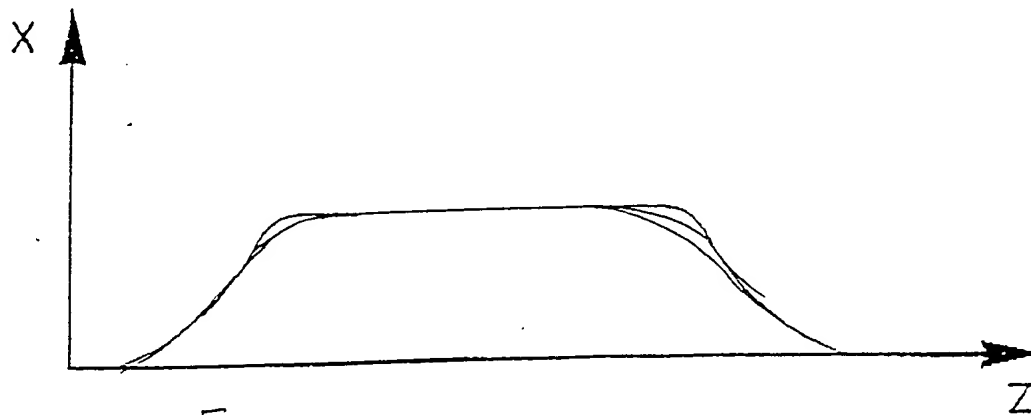
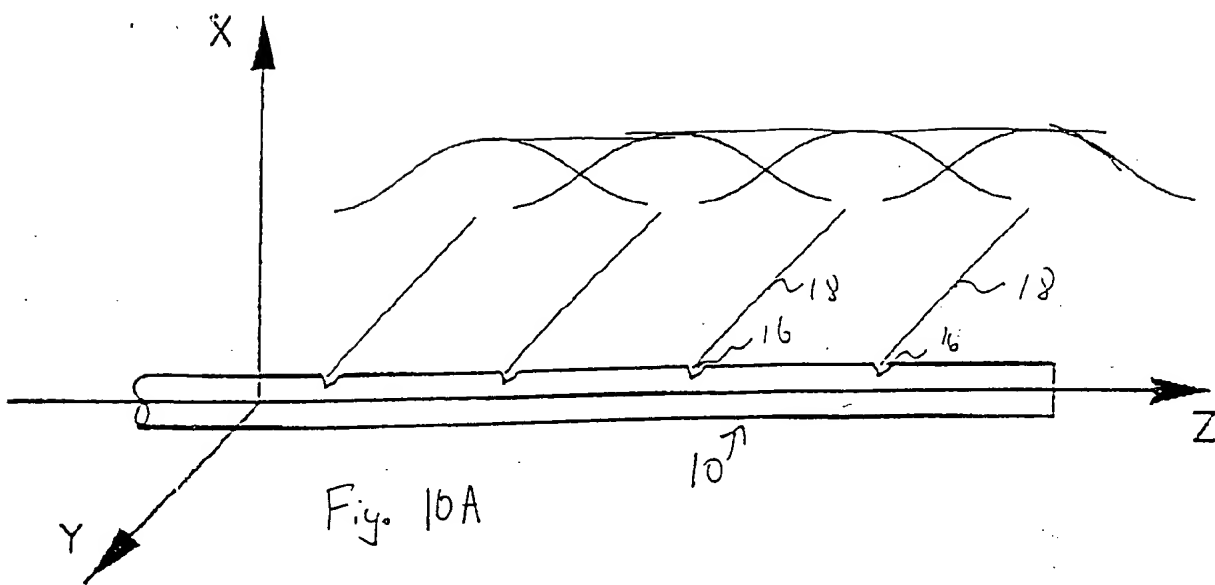


Fig. 11



APPROXIMATE TAP STRUCTURE(S) OF
DESIRED ILLUMINATION PATTERN
USING THREE LAYER PLANAL
DIELECTRIC WAVEGUIDE(S) S1610

GEOMETRICALLY MODEL
TAP CROSS SECTION S1620

DECOMPOSE EVANESCENT CLADDING
FIELDS AS A WEIGHTED SUM
OF PLANE WAVES WITH DIFFERENT
PROPAGATION DIRECTIONS USING
FOURIER TRANSFORM S1630

PREDICT ILLUMINATION PATTERN
USING SNELL'S LAW OF REFRACTION
AND FRESNEL EQUATIONS S1640

Figure 12A

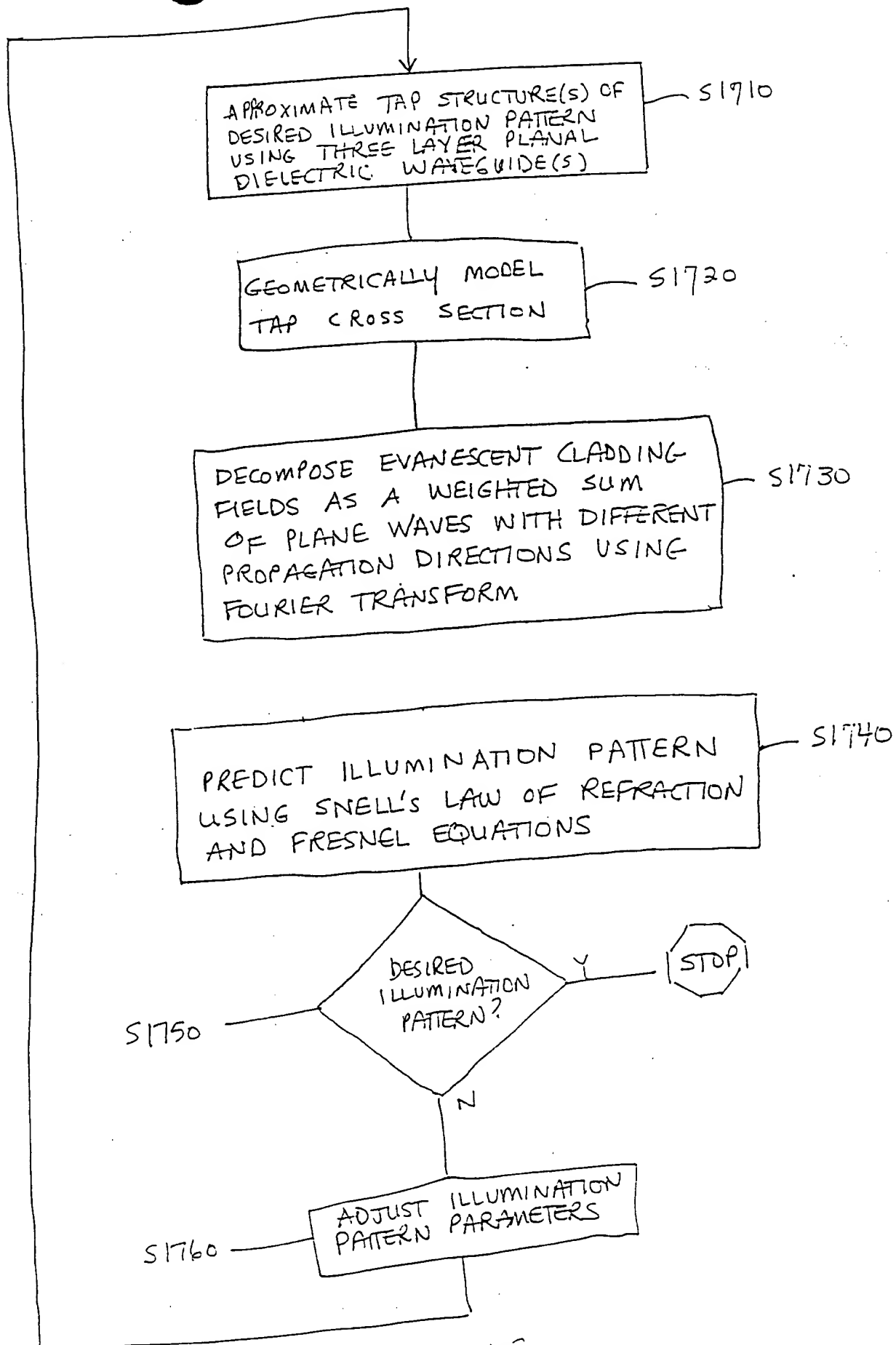


Figure 125

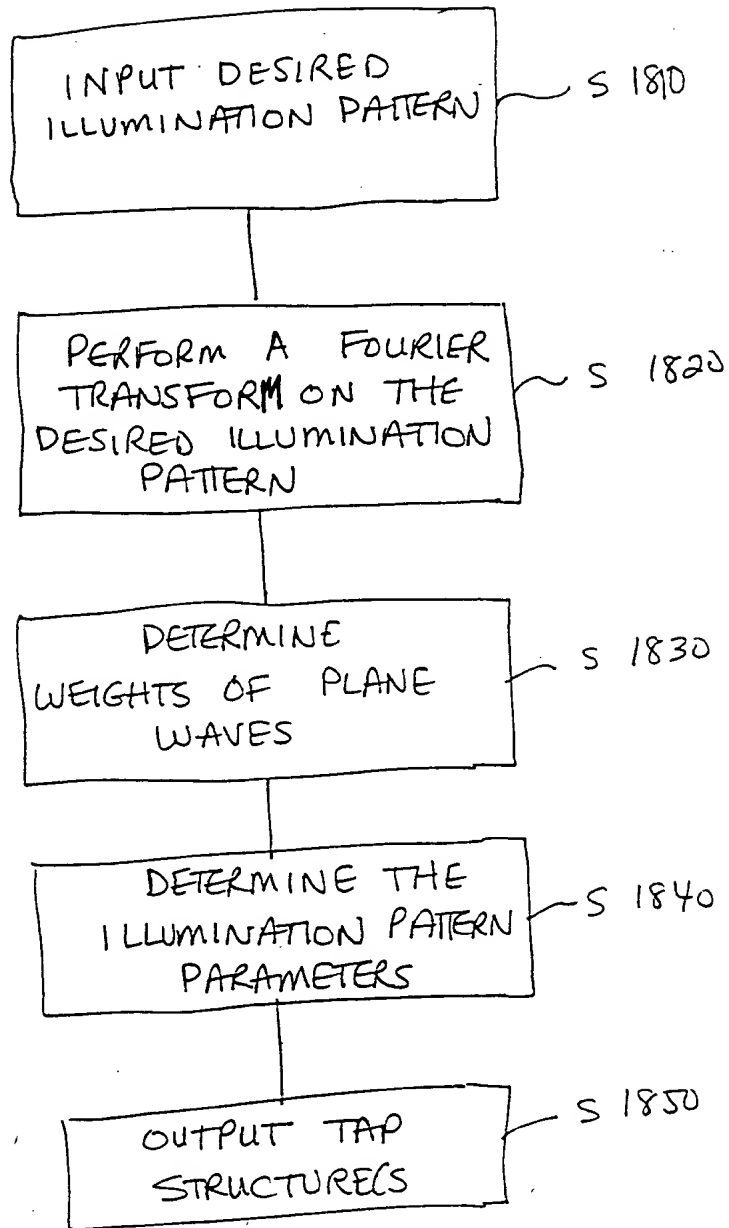


Figure 12C

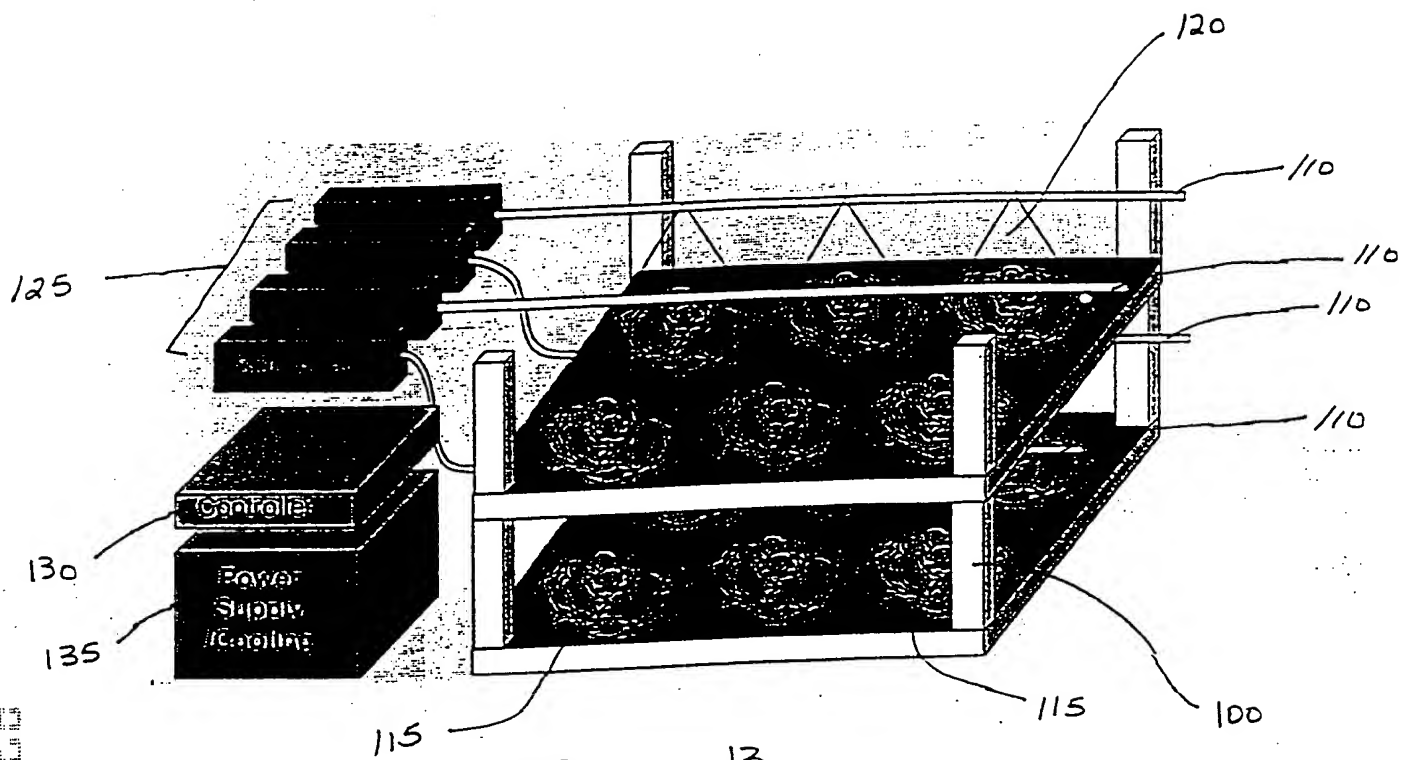


Figure 13

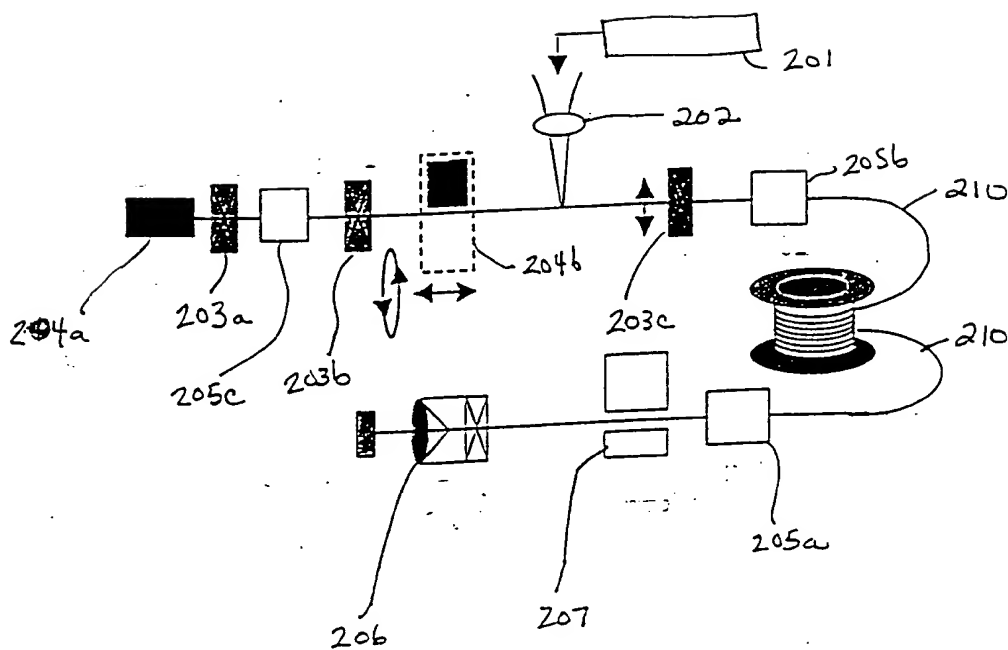


Figure 14

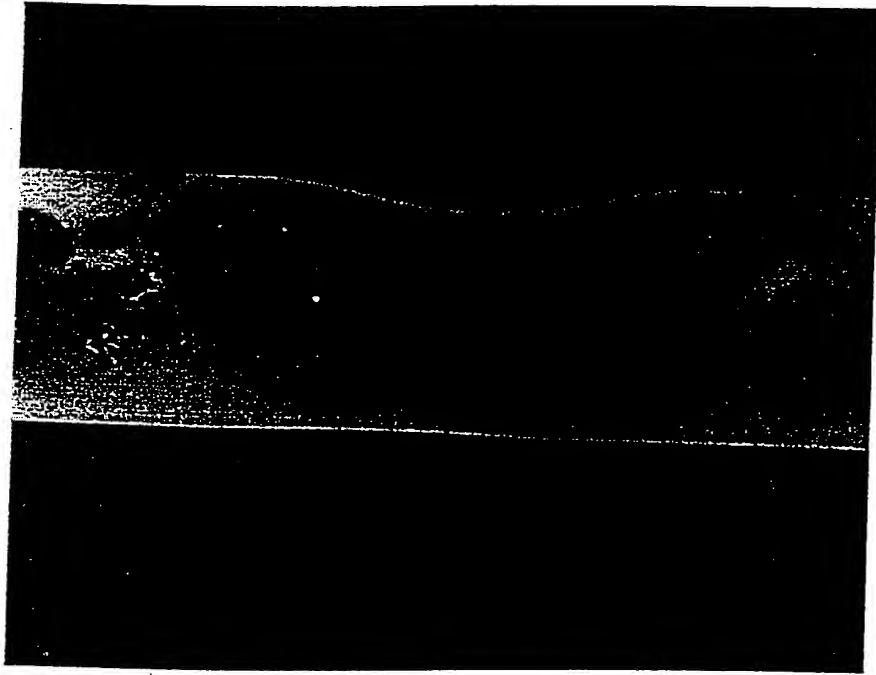


Figure 14A

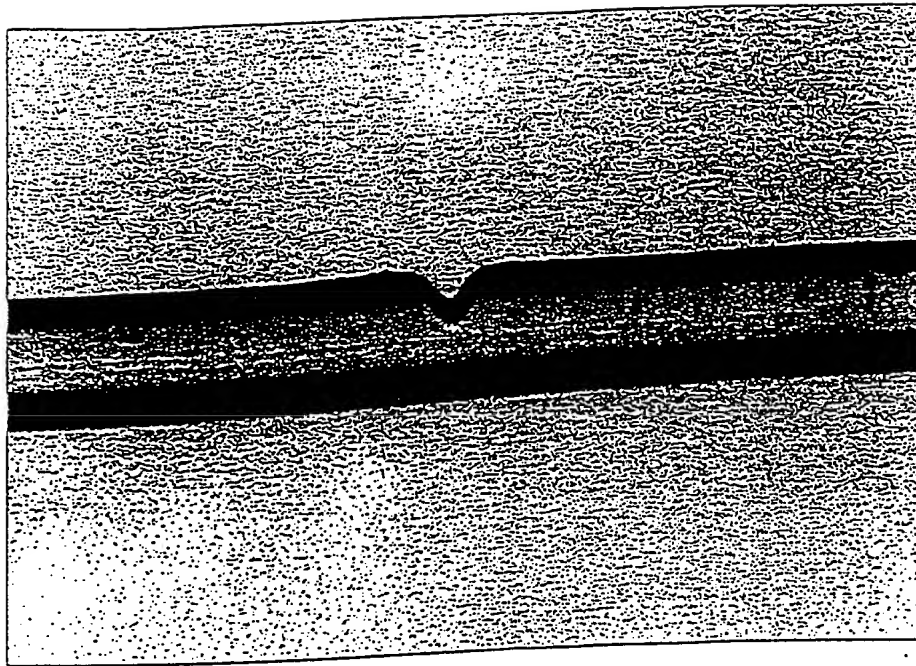


Figure 15

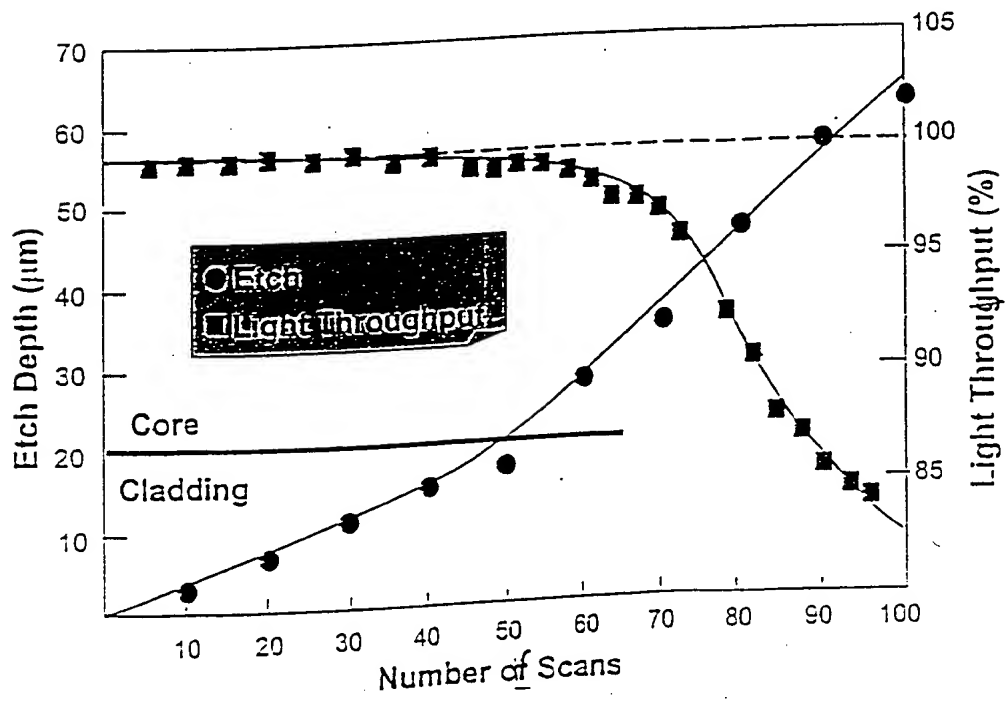


Figure 16

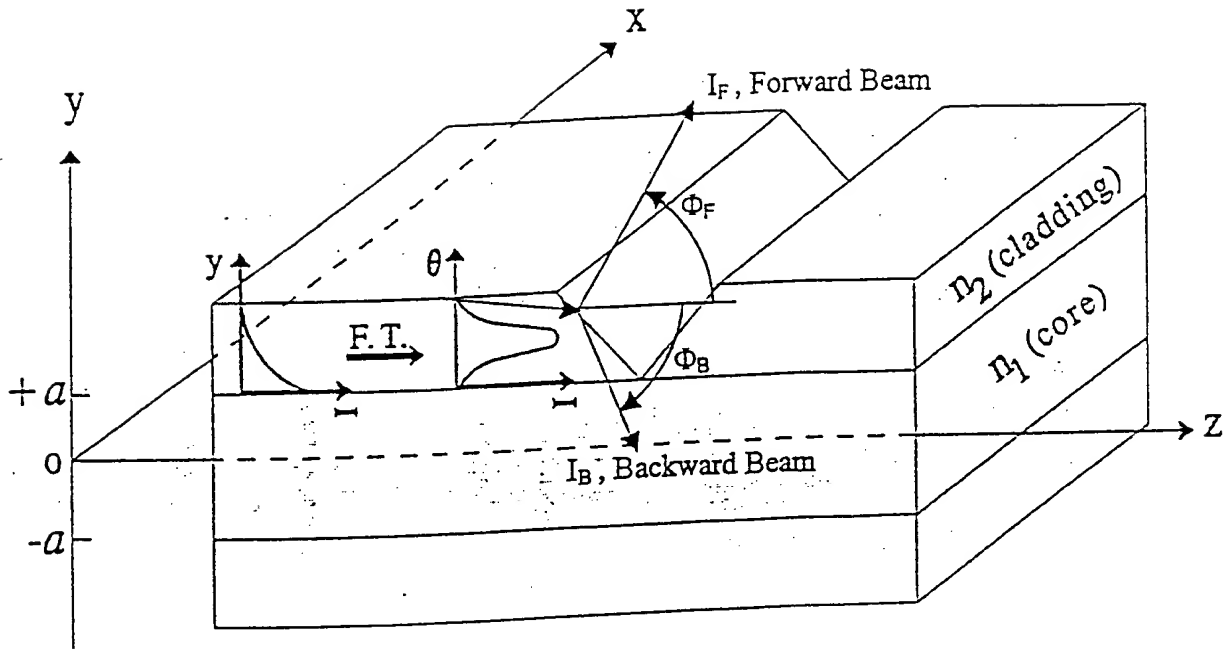


Figure 17

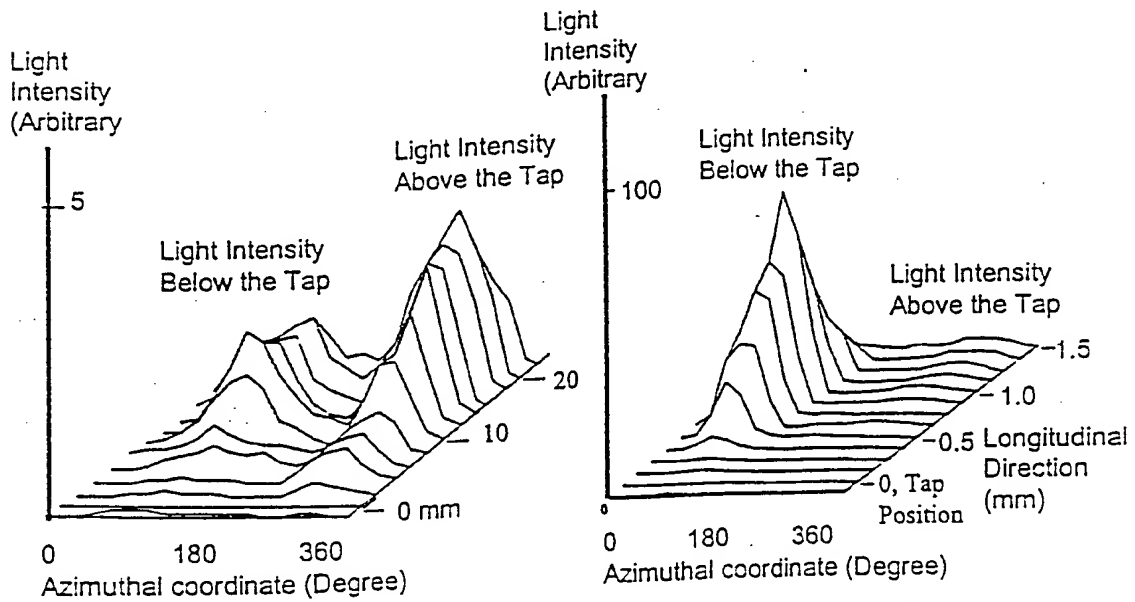


Figure 18A

Figure 18B

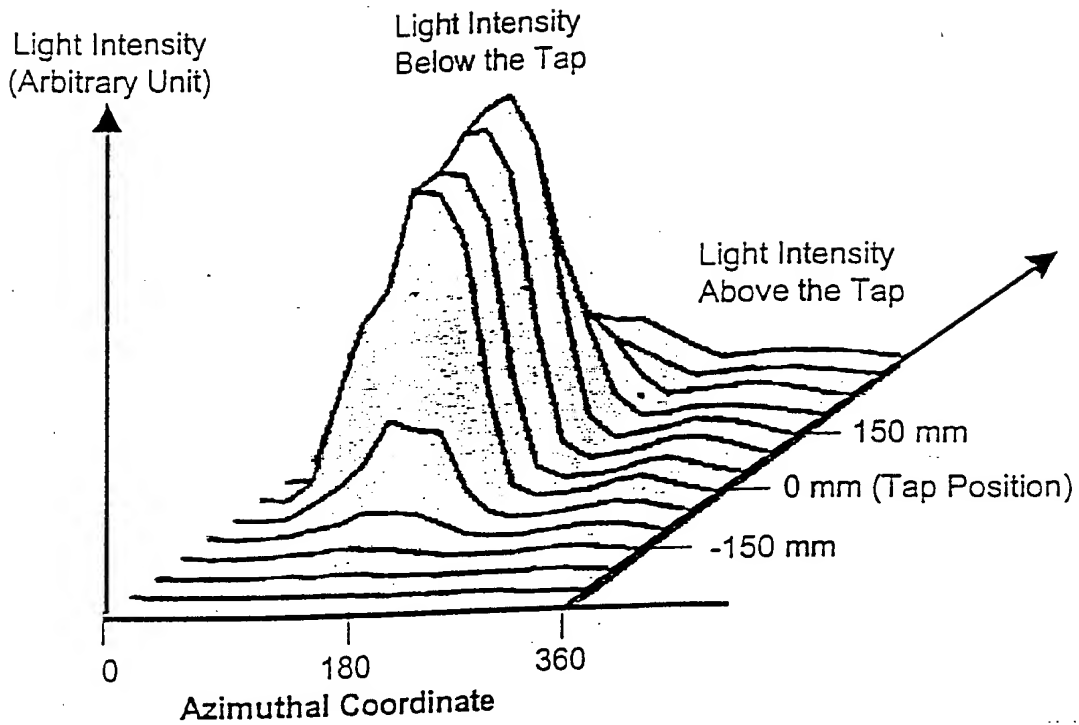


Figure 19

Tap Angle (α)	Polarization	Φ_B	Φ_F	I_B/I_{total} (%)	I_F/I_{total} (%)
10° (Multimode fiber)	s (Theory)	20.5°	10.5°	54.3	45.7
	p (Theory)	17.1°	10.5°	54.4	45.6
	random	17°	15°	48.4	51.6
	(Experimental)				
35° (Multimode fiber)	s (Theory)	60.1°	17.8°	95.7	4.3
	p (Theory)	60.1°	16.3°	96.5	3.5
	random	60°	~ 0	92.6	7.4
	(Experimental)				
50° (Single mode fiber)	s (Theory)	98°	~ 0	89.9	10.1
	p (Theory)	95°	~ 0	86.7	13.3
	random	84°	~ 0	91.0	9.0
	(Experimental)				

Figure 22

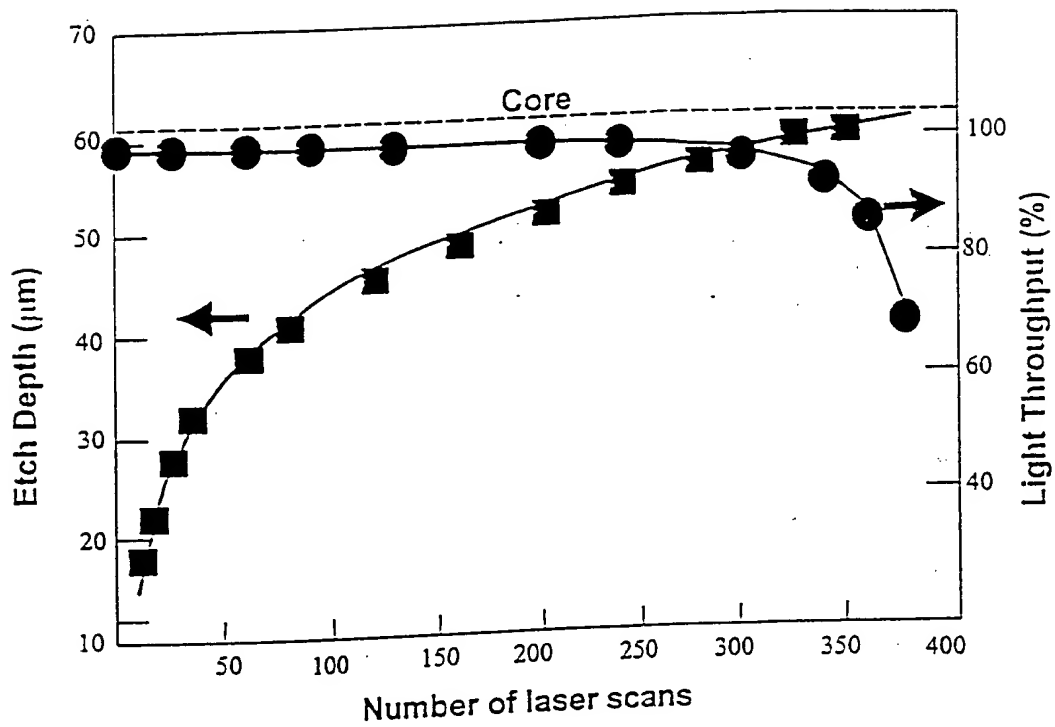


Figure 20

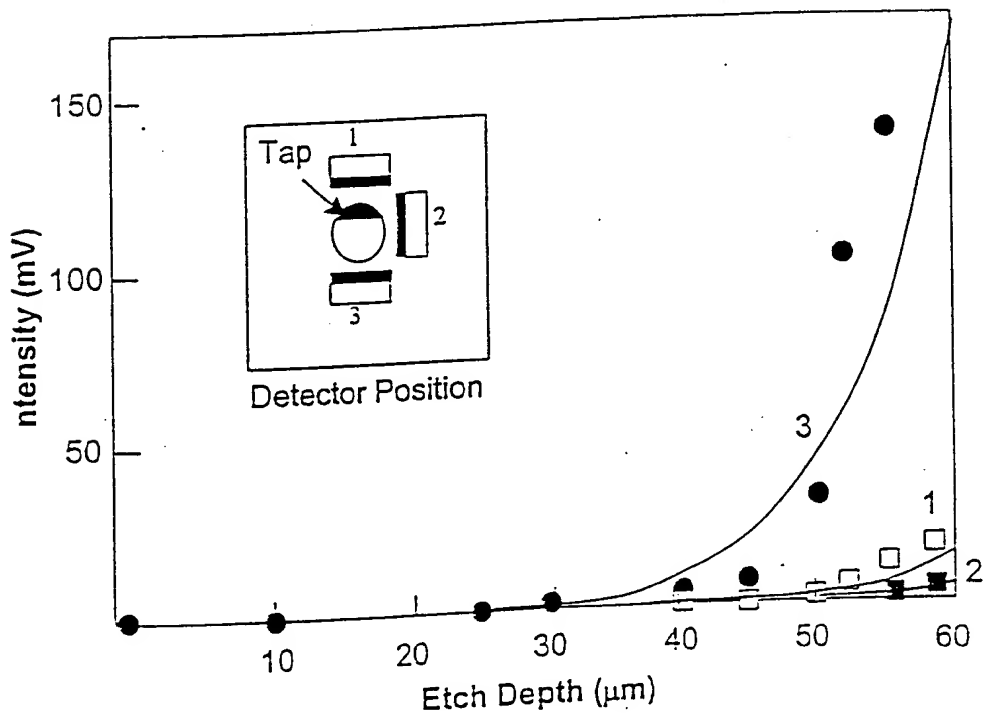


Figure 21

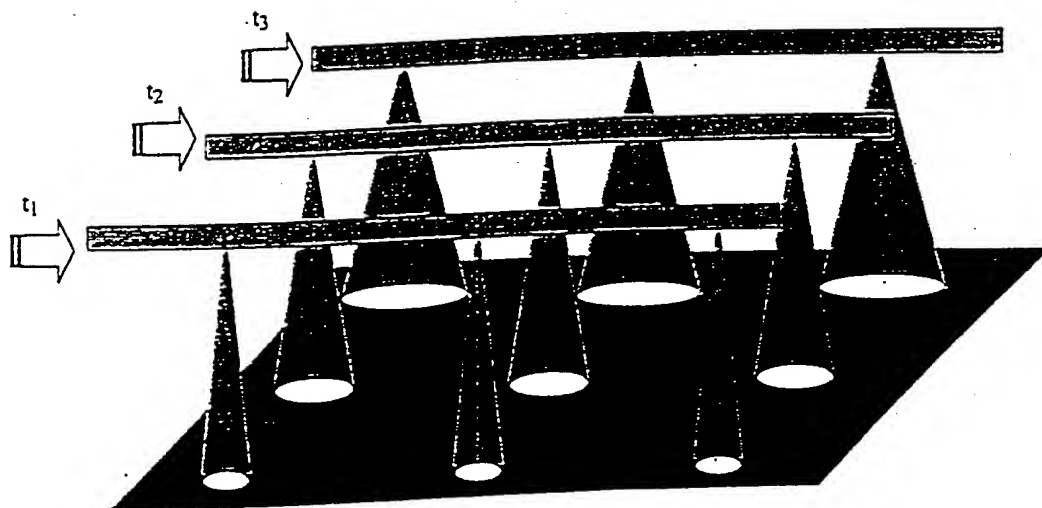


Figure 23

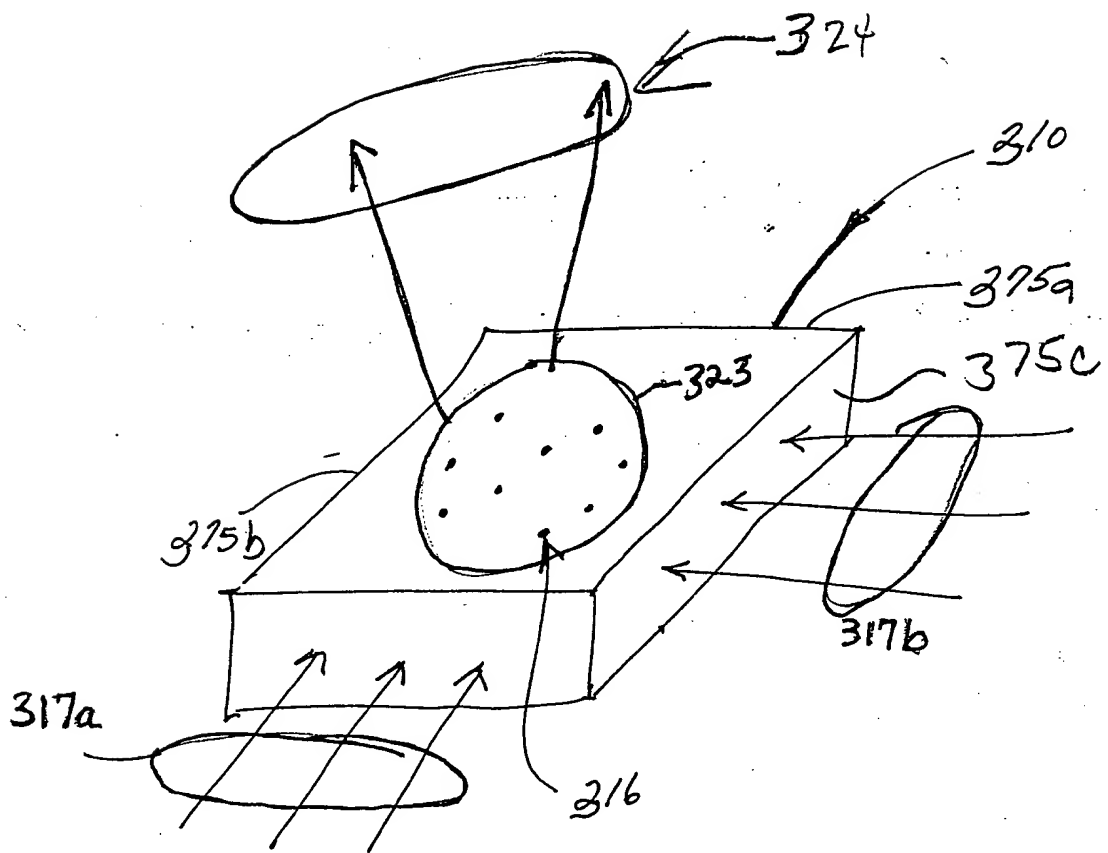


Fig. 24